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ches, wei bei Cœcilia, ganz vom Maxillarbein oder wei bei Epicrium und Siphonops an seiner äusseren circumferenz nur von der äusseren Haut bedeckt ist." Thus it is seen that the location of the organ in Amphiuma is very similar to its location in Gymnophiona.

A further corroboration of my views is noticed in the relation of the branches of the ramus maxillaris to the external sheath of the tentacle. According to Wiedersheim, in the Gymnophiona three branches of the maxillary nerve attend the tentacular apparatus in its course in the sub-orbital region. In Amphiuma I have found these three branches occupying the same relative position as is indicated by mx* in Fig. I. This striking similarity is seen at a glance by comparing fig. 54 in Wiedersheim's Anatomie der Gymnophionen with Fig. I. Before one can be convinced that the so-called tentacular apparatus in Amphiuma is really such I am aware my investigations must be verified by the discovery of this atrophied organ in other specimens. The importance of the discovery of such a feature is emphasized by Kingsley: "Were it true that Amphiuma possesses, either in the young or the adult, rudiments of a tentacular apparatus, the fact would prove of great value to those who would recognize in the Gymnophiona only degenerate Amphiumæ." Cope and the Sarasins have deduced considerable evidence favoring the close relationship of Amphiumidæ and Cœciliidæ, which fact renders it the more credible that a rudimentary tentacular apparatus has really been found in Amphiuma.—ALVIN DAVISON, PH. D.

PSYCHOLOGY.

Synæsthesia and Synopsia.—Until quite recently synæsthesia was regarded by psychologists generally as a purely artificial and fanciful association, or at best as a sign of degeneracy; it has lately received considerable attention, however, and the weight of evidence goes to show that it is both natural and normal—it may even be said, a phenomenon of common occurrence.

In an exhaustive monograph on the subject, published in 1893,[1] Prof. Flournoy of Geneva for the first time introduced a terminology which aimed to distinguish scientifically between the different forms of synæsthesia. The most important phase is the association of visual images, or *synopsia.* Attention was first called to this by Fechner, in 1876.

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[1] Les phénomènes de la synopsie (audition colorée); by Th. Flournoy; Paris, 1893; pp. 259.

Flournoy distinguishes here between photisms, diagrams and personification. The first of these is the *audition colorée* of earlier writers; it consists in the natural association of a color with each particular sound, so that a spoken word appears to the hearer to be tinged with one or more hues, corresponding to its constituent vowel sounds. A diagram is a visual scheme in which some natural series of ideas (such as the months, days of the week, numbers, etc), is arranged. When a member of the series is recalled, the appropriate part of the diagram is visualized. Personification is simply the attributing of some personal characteristic, such as sex, to a number, etc.; or the association with it of a feeling of like or dislike. Flournoy reports some 350 persons as possessing synopsia in one or other of its forms, out of 2600 to whom questions were addressed, (13 per cent.); but as a large portion of his question-sheets were never returned, the real percentage may be regarded as somewhat greater.

In a recent paper,[2] Miss Calkins gives the results of a personal canvass of Wellesley students in 1893 and 1894. For the former year the affirmative answers numbered 33 per cent., for the latter 60 per cent. It may be doubted whether all the latter are true cases of synopsia. Yet when due allowance is made for possible temporary associations, it must still be admitted that synopsia is by no means a rare phenomenon.

Richard Hennig[3] gives an interesting study of the diagram-forms occurring in himself and his immediate family. He is able in a number of cases to trace their origin to certain associations of early childhood, and favors the 'natural,' or experiential view of the origin of all such schemes. He strongly opposes the notion of inherited forms or photisms: Only two pair in the list given by Galton, he thinks, show any real resemblance, and these may well be accounted for by similarity of early environment. "Only the tendency to synopsia can be inherited; but here the influence of heredity is unmistakable and undoubted." The writer points out a similarity between the number-form of himself and one brother brought up under the same surroundings, while in the case of another brother, whose early life was spent in another environment, the diagram was radically different. Herr Hennig urges the usefulness of the number-form as a mnemonic aid, and cites the case of a friend, who easily memorized dates by association with the appropriate places in his number-diagram.

J. Philippe has lately investigated the synopsia of blind persons, and finds a remarkable number of cases among them, though none occurred among those who were blind from birth.

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[2] Synæsthesia, by Mary W. Calkins; Amer. Journalof Psychology, VII, 90–107.

[3] Ztschr. f. Psychol., X, 183–222.

With the reduction of synæsthesia to a scientific basis, which Flournoy has brought about, and the demonstration of its wide-spread occurrence, comes the demand for a more thorough examination of its bearing upon other departments of psychology. The physiological interpretation of synopsia is still unsettled, and is commended to physiological psychologists as a fruitful theme for investigation.—H. C. Warren.

ANTHROPOLOGY.[1]

Exploration by the University of Pennsylvania in West Florida.—Little more than a year ago my friend Lieutenant Colonel C. D. Durnford formerly of the English Army, returning northward from a journey in the West Indies and Florida brought with him the specimens of aboriginal rope and netting found in a mud bed near Marco, Florida described by him in the American Naturalist for November, 1895.

That he realized the importance of the digging done in the mud in April, 1895 by himself and Mr. Charles Wilkins of Rochester, New York, was shown by the fact that on reaching Philadelphia he made the effort at once to present the details of the discovery to archæologists. As an original observer, a gatherer of inspiration from nature, coming generously to present us with unprecedented specimens and archæological data of much value, discribing to myself and others the details of the discovery and stating his belief that the lagoon fringing islands near Marco were net-worked with artificial canals, and would disclose other and similar relic preserving mud deposits, to him belongs the honor of opening a new door for archæology in the southeast.

The prompt recognition of the originality and value of this intelligence by Dr. William Pepper and his energetic action in cooperation with Mr. Stewart Culin, Director of the Department of Archæology have resulted in the recent expedition of the University of Pennsylvania sent by Dr. Pepper to Florida in the late months, under the direction of Mr. Frank Hamilton Cushing, whose fortunate presence in Philadelphia at the time of Colonel Durnford's visit ended in his employment by Dr. Pepper as Conductor of the Exploration. This led to the association of the Bureau of Ethnology of Washington of which

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[1] This department is edited by H. C. Mercer, University of Pennsylvania.